

Kirk as occurring in the New-Zealand seas; but I am inclined to think the New-Zealand species distinct, since Mr. Kirk mentions the existence of a "prominent spine" on the anterior margin of the hand in his specimens: this I have never observed in the true *P. pusillus*, which has the distal end of the anterior margin acute or armed with a very small spinule.

Atelecyclus rotundatus, Olivi.

Several specimens of this common Mediterranean species are in the collection. Length of the largest 11 lines (23 millim.), breadth a little over 1 inch 1 line (28 millim.); the others are all much smaller.

[To be continued.]

XXII.—*Remarks upon Mr. Wood-Mason's Paper "On the Discrimination of the Sexes in the Genus Paludina."* By
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MR. WOOD-MASON'S object is to show that the sexes of *Paludina* are distinguishable by differences both in the shells and animals. This fact, I need scarcely remind the readers of this journal, has been known for nearly two hundred years. Lister, in 1695*, gave a very fair anatomical description of the animal, demonstrating (p. 46) the bisexuality of the genus and the characters of both male and female.

He says, in reference to the distinguishing external features, "si tamen nota aliqua externa, qua mas a foemina primo intuitu discerni possit, desideretur, scire licet mares fere minores esse, deinde, in maribus dextrum cornu (tab. 2. fig. 1, f) sinistro duplo latius esse, apiceq. obtuso desinere." On turning to the above-quoted figure we find it thus described:—"Dextrum maris cornu obtusum, in quo penis exitus est."

The latter discovery has since received confirmation from Cuvier †, Moquin-Tandon ‡, and others.

Supposing a marked difference in the size of the adult shells generally prevails in the sexes of *Paludina*, I fail to perceive how a conchologist, judging from the shells alone, can know which, in any series he may have before him, have contained males and which females. In any large number of a species

* 'Exercitatio anatomica altera, in qua maxime agitur de Buccinis fluviatilibus et marinis' (12mo, London, 1695).

† Ann. du Mus. 1808, p. 170; also Mémoires pour serv. à l'Hist. des Mollusques, 1817.

‡ Mollusques terr. et fluv. de France, 1855, vol. ii. pp. 530-537.

we invariably meet with intermediate sizes, which *with certainty* can neither be considered small females nor yet large males. Then, again, as in other classes of the animal kingdom, individuals of the same species of both sexes vary much in their dimensions; consequently that which we might deem an ordinary-sized female would possibly prove to be an overgrown male were the inhabitant known, and *vice versâ*.

Mr. Wood-Mason says, in reference to the difference in the size of the shell, "It is far from probable that any other Gasteropodous genera will be found to present similar sexual differences." But this feature has *already* been noticed in the whelk tribe (*Buccinum*); for Messrs. H. and A. Adams (Genera Recent Moll. vol. i. p. 108) observe, "The shells of the males are generally smaller than those of the females," a result due probably to the same cause as in *Paludina*, namely the greater space requisite to contain a distended ovarium.

In the quotation from Professor Owen's work ('Lectures on the Comparative Anatomy and Physiology of the Invertebrate Animals,' 1855, p. 564) there occurs an important mistake. Mr. Wood-Mason observes that in *Paludina vivipara* the penis "is closely connected with the right tentacle" (*Owen*). From this it might seem to some that the great anatomist was somewhat indefinite in his demonstration. However, if the line had been correctly quoted, and the words "*united to*" substituted for *connected with*, the sense and clearness of the description become apparent. Moreover, can it for a moment be conjectured that the writings of Lister and Cuvier upon this subject were unknown to the distinguished author. Mr. Wood-Mason goes on to say, "but in the Indian species the penis is altogether aborted, and its function has been transferred to the contiguous right tentacle, which has consequently become converted into a hooked copulatory organ."

From this it would appear that he imagines that in *P. vivipara* the penis arises from a spot somewhere near the right tentacle, whereas it is contained within it, as in his Indian species, and although contained by it, does not, I conjecture, transfer its *function* at the same time, the tentacle being but as a sheath to the penis, which, at the time of copulation, protrudes through the end of it.

Beyond the fact of the tentacle in question being curved or hooked in *P. crassa* and *P. bengalensis*, we gain little further knowledge of this genus from Mr. Wood-Mason's paper; and it is advisable that inquiry should be made concerning what has already been done upon any subject before trespassing upon the valuable space of such a journal as the 'Annals and Magazine of Natural History.'